

Strengthening the Public Health System

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Synopsis

Although the American public health system has made major contributions to life expectancy for residents of this country over the past century, the system now faces more complex health problems that require comprehensive approaches and increased capacity, particularly in local and State public health agencies. To strengthen the public health system, concerted action is needed to meet these five critical needs:

First, the knowledge base of public health workers needs to be supplemented through on-the-job training and continuing education programs. To this end, self-study courses will be expanded, and a network of regional training centers will be established throughout the country.

Second, communities need dynamic leadership from public health officials and their agencies. To enhance leadership skills and expand the leadership role of public health agencies, focused personal leadership development activities, including a Public Health Leadership Institute, and national con-

ferences will provide a vision of the future role of public health agencies.

Third, local and State public health agencies need access to data on the current health status of the people in their communities and guidance from the nation's public health experts. To improve access to information resources, state-of-the-art technologies will be deployed to create integrated information and communication systems linking all components of the public health system.

Fourth, local and State agencies need disease prevention and health promotion plans that target problems and develop strategies and the capacity to address them. To provide communities with structured approaches to this process, planning tools have been developed and distributed, and technical assistance will be provided to local and State health agencies to involve each community in planning, priority setting, and constituency building.

Finally, public health agencies need adequate resources to fund prevention programs. To improve the use of existing Federal support and enhance the availability of new community resources, grant programs will be modified, and innovative approaches to local resource enhancement will be developed and shared.

Activities in these five key areas are designed to improve the infrastructure of the public health system and its capacity to carry out effectively the core functions of public health assessment, policy development, and assurance of the availability of the benefits of public health. If the nation is to achieve the health objectives for the year 2000, the public health system—the individuals and institutions that, when working effectively together, promote and protect the health of the people—must be strengthened.

WHILE YESTERDAY'S DEATHS and chronic infirmities were primarily caused by infectious diseases and poor sanitation, many of today's health threats are linked to lifestyle risk factors and environmen-

tal hazards. Public health agencies, particularly on the local and State levels, must extend their scope beyond traditional functions like sewerage and restaurant sanitation, vital records maintenance,

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and immunization services to toxic waste, tobacco-related illness, alcohol and substance abuse, and unintentional injuries and deaths caused by motor vehicles. More complex health problems require more comprehensive approaches, which call for enlarging the capacity of the public health system (1).

A clear vision of this broader public health universe is described in the 1988 Institute of Medicine report, "The Future of Public Health" (2). It enumerates the core functions in public health as (a) assessment, "The regular, systematic collection, assembly, analysis, and dissemination of information on the health of the community." (b) policy development, "The development of comprehensive public health policies by promoting the use of the scientific knowledge base in decision making." assurance - "The assurance to constituents that services necessary to achieve agreed-upon goals are provided by encouraging actions of others (private or public), requiring action through regulation, or providing service directly."

To carry out these core functions effectively, public health agencies should perform the following 10 basic public health practices:

- Assess the health needs of the community.
- Investigate the occurrence of health effects and health hazards in the community.
- Analyze the determinants of identified health needs.
- Advocate for public health, build constituencies, and identify resources in the community.
- Set priorities among health needs.
- Develop plans and policies to address priority health needs.
- Manage resources and develop organizational structures.
- Implement programs.

- Evaluate programs and provide quality assurance.
- Inform and educate the public.

This broadened public health horizon was reinforced by the statement of new goals and specific objectives for the nation in "Healthy People 2000: National Health Promotion and Disease Prevention Objectives" (3). In addition to objectives that relate to a broad range of specific health problems, one objective addresses the need for an effective public health system:

Objective 8.14: By the year 2000, at least 90 percent of the population should be served by a local health department that is effectively carrying out the core functions of public health: assessment, policy development, and assurance.

To achieve this objective, we must strengthen the infrastructure of the public health system, described as the "individuals and institutions that, when working effectively together, promote and protect the health of people. The public health system in America consists of the strategies, facilities, the material resources and, above all, the human resources committed to transforming our national health" (1).

According to Hanlon and Pickett in "Public Health Administration and Practice" (4):

The infrastructure is not a tangible organizational unit. It is the core of the agency, its nerve system, its presence. It constitutes the ability of the agency to set objectives, monitor progress, and to make decisions based on feedback and knowledge—decisions that may serve to change the direction or the methods used by the agency to achieve its objectives.

Thus, the infrastructure of the public health system can be viewed as the capacity required by the governmental components of the public health system to carry out the core functions of public health and perform the basic public health practices listed previously. The capacity of local health departments to perform these core functions deserves particular attention, since in many ways, the local agency represents the "heart of the public health system." To strengthen the infrastructure of the public health system, these five key determinants of system capacity must be improved:

1. the professional knowledge, skills, and abilities of the public health work force,
2. the ability of individual public health officials and their agencies to provide dynamic community leadership,
3. the ability of public health workers to access relevant information,
4. the ability of public health organizations to engage with the community in planning, priority setting, and constituency building, and
5. the ability of public health agencies to obtain and utilize fiscal resources.

Infrastructure Development Areas

As we discuss these five areas of infrastructure development in the following section, we summarize critical needs and describe a strategic approach to addressing these needs. We also include examples of Centers for Disease Control (CDC) activities in each area. Activities of all the agencies of the Public Health Service (PHS) are listed in the recently published document entitled, "A Plan to Strengthen Public Health in the United States" (5).

Human Resource Development

Needs. Public health workers have consistently shown dedication and an enduring commitment to their mission. The public health system itself, however, has not demonstrated a comparable commitment to enhancing the skills, knowledge, and abilities of its greatest asset, its vital human resource.

As the scope of public health programs broadens and they become more complex, limitations in the capacity of the public health work force to perform basic practices are apparent. For example, a recent survey by the National Association of County Health Officials (NACHO) and CDC of local health departments found that only 11 percent of 2,263 departments surveyed have direct access to a trained epidemiologist or statistician on their staff (6). As communities adopt year 2000 objectives, the absence of such persons to assess the health status of the community will severely limit the capacity of the health departments to monitor progress in targeted areas. As the scope of public health programs expands, the work force will need training and career development opportunities.

As budgets are cut and priorities shift, training programs in Federal, State, and local agencies usually suffer. Further, schools of public health are often oriented toward providing graduate training emphasizing research skills rather than practice

skills. If the public health system is to meet the challenges of the future, attention must be paid to developing the public health work force.

Strategic approach. Public agencies are limited in their ability to provide training for their own employees and even to pay out-of-State travel and tuition costs for courses elsewhere. Most agencies have difficulty, because of staff shortages, allowing employees time away from their normal duties. Therefore, training programs should be designed to avoid substantial travel costs and, as feasible, to be integrated into normal work activities.

"Distance-based" training makes use of self-study courses, modern communication technologies like satellite transmission and interactive videoconferencing, and interactive learning techniques to provide workers with knowledge, skills, and abilities needed for improved job performance. Such training can be delivered through regional training centers or at the employee's work site.

Specific CDC activities. The CDC self-study program offers courses in epidemiology, infectious disease control, environmental health, vector-borne disease control, foodborne disease control, HIV, and other areas. The content of these courses has been updated and expanded recently to meet changing educational needs. The marketing and distribution of these course materials are now being enhanced. Continuing Education Units and Continuing Medical Education Units have been established for most of the courses. Similar materials have been developed by schools of public health.

Course enrollment is free for employees of CDC or of State and local government agencies. Employees or representatives of the Federal Government (other than CDC), private entities, and of international governmental and nongovernmental organizations who enroll in the self-study courses are required to pay \$18 per course. Additional information can be obtained from CDC Distance Learning Program, Mail Stop F02, 1600 Clifton Rd., NE, Atlanta, GA 30333, telephone 404-639-2142.

Training networks established in recent years, such as, for example, the National Laboratory Training Network, Sexually Transmitted Disease Training Centers, and Chronic Disease Training Centers, are being expanded. As part of a recently funded Assessment Initiative, CDC will be expanding training in epidemiology and health statistics using distance-based techniques. Finally, to provide a more comprehensive, integrated approach to distance-based training for public health workers, a

planned CDC Public Health Training Network will establish regional training sites and an expanded self-study program to address training needs throughout the public health work force.

Leadership Development

Needs. If public health agencies and their professional personnel are to take on a broader mission, effective leadership is needed. As summarized in "The Future of Public Health" (2), leadership positions in public health present an extraordinary range of challenges. To be effective, those who hold these positions must be technically and managerially competent and politically astute. They must be effective communicators, motivators, and mobilizers of public opinion.

Often the mission of public health agencies does not include community leadership. Many local health departments view their role as providing a limited array of personal and environmental health services (6). To address the communities' needs, public health agencies must expand their mission to include the provision of community leadership in health.

Strategic approach. Skills can be enhanced through focused, intensive leadership development programs in which solutions to shared problems can be exchanged and a clearer vision of the future developed. National or regional conferences can enhance the ability of organizations to provide community leadership for emerging health issues.

Specific CDC activities. In 1991-92, CDC, in collaboration with a consortium of California schools of public health (the University of California at Berkeley, the University of California at Los Angeles, and San Diego State University), sponsored the first annual Public Health Leadership Institute, designed to enhance the leadership skills of local and State health officers and to increase their understanding of emerging public health issues. Similar activities have been developed or are planned through other academic institutions, such as, for example, the University of Washington School of Public Health and the University of Illinois School of Public Health. CDC, in collaboration with the Public Health Foundation, is currently sponsoring a series of national teleconferences directed at health officers on emerging issues in public health.

Finally, a wide variety of national conferences is being planned to develop a clearer vision of the

role of public agencies in selected prevention areas. For example, the National Institute for Occupational Safety and Health (NIOSH) sponsored the National Conference on State-Based Occupational Health and Safety Programs in September 1991 to develop guidelines and model legislation for use by State health agencies that are establishing or expanding occupational health programs.

Organizational Development

Needs. Public health agencies often find that they react primarily to immediate crises but have no long-range prevention plans. To the extent that plans have been developed, agencies often fail to work with the community or to use systematic approaches to planning and priority setting. Consistency and community involvement in these processes are necessary to provide adequate leadership to the community.

Strategic approach. In recognition of this need, the Assessment Protocol for Excellence in Public Health (APEX) (7), model standards (8), and the year 2000 objectives (3) were developed for local and State agencies to use to involve their communities in identifying local needs and in building constituencies to address them.

Involvement of national organizations like NACHO, the Association of State and Territorial Health Officials, U.S. Conference of Local Health Officers, American Public Health Association, and Association of Schools of Public Health will be essential to provide a broad base of leadership and direct participation.

Specific CDC activities. Following the dissemination of these tools, CDC will develop training and technical assistance projects to assist in their use, working through State health agencies to strengthen local-State linkages.

NACHO has distributed approximately 4,500 copies of the APEX workbook to local and State health officials since the spring of 1992. CDC staff members provide technical assistance to selected States, such as Washington and Michigan, in efforts to implement APEX statewide. The "Model Standards," Third Edition, was published by the American Public Health Association (APHA) in August 1991. CDC and APHA (and others) will develop training materials to use with the document. CDC has developed a "Guide to the Selection and Utilization of Selected Health Assessment and Planning Models" that can assist local and

State agencies in the selection and use of these planning tools. Excerpts from this guide are incorporated into the recently published Model Standards document (8). CDC has worked with and will continue to help selected local and State agencies develop their own year 2000 health objectives.

Finally, the CDC program, Excellence through Community Empowerment and Leadership (EXCEL), will employ a Peer Assistance Network and an Agencies of Excellence Program to assist health departments in using APEX, Model Standards, and other tools to provide leadership to community efforts to achieve health objectives. Leaders of health agencies in successful communities can provide advice, counsel, and technical assistance to their peers in other communities. The CDC EXCEL Program will identify, train, and support a peer network of these leaders to provide technical assistance to their colleagues in the use of community empowerment models such as the Assessment Protocol for Excellence in Public Health (APEXPH) and Model Standards. In addition, many of these successful health agencies can serve as organizational models and training sites for staff members from other health departments. The EXCEL Program will identify and support Agencies of Excellence where staff members from other agencies can learn about effective organizational use of APEXPH, Model Standards, and other community empowerment models.

Information Resource Development

Needs. We live in an information-based society. To be effective, public health programs need various types of information, including data describing the health status of their community or State, current CDC recommendations and reports, sources of technical expertise, and listings of training courses and materials. Federal officials need access to data from States and localities and an integrated information delivery system to communicate with others in the public health system. As we develop better communication methods, public health agencies need to improve their ability to use this technical information to influence public opinion and behavior.

Strategic approach. Modern communication technologies are essential to improve the access of agencies throughout the United States to relevant information. The capacity to transmit data, text, audio, and video through a single multifunction

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work station, combining the functions of the computers and television, will soon be available (9).

Selected CDC activities. CDC researchers have recently developed computer programs, such as WONDER and Epi Info, to assist in the acquisition and analysis of public health data. To improve data access further, CDC staff in NIOSH and the National Center for Health Statistics (NCHS) have transferred large information files and data sets to CD-ROM, thus permitting immediate access without having to connect with an on-line data base. In addition, CDC is consolidating surveillance reporting systems and identifying key health status indicators. CDC is working to evaluate and improve the effectiveness of communication through the Morbidity and Mortality Weekly Report, a premier public health communications vehicle. Also, through the development of the National Public Health Information Coalition, communication specialists in CDC and State health departments are improving their ability to communicate prevention information to the public. Finally, CDC is working to consolidate its communication technologies into a single CDC Information Network for Public Health Officials, applying the most up-to-date technologies for transmitting health data, prevention recommendations, training materials and courses, and emergency alerts among all components of the public health system. Pilot projects will begin in early 1993. The national system should be completed by the late 1990s.

Fiscal Resource Development

Needs. The vision of an expanded role for the public health system cannot become reality without careful and creative attention to fiscal resources.

Traditionally, public health programs have been funded largely through tax revenue generated at the local, State, or Federal level. Budget increases have rarely kept pace with financial needs. Local and State governments can generate revenue through fees for service, but such revenue-generating activities have limitations. No one population can be singled out for certain fees, such as foodborne illness investigation, for example. Further, most local and State government agencies have statutory limits on revenue generation, and there may be concerns about public agencies competing with the private sector. Public agencies will need assistance in developing innovative approaches to financing public health programs.

Currently, local and State public health agencies receive Federal funds through grants directed at specific disease prevention areas like immunization, control of sexually transmitted disease, and prevention of childhood lead poisoning. Local and State officials have consistently observed a need for flexibility in applying funds so that needs in related areas can be addressed.

Finally, PHS funds are provided to community-based organizations and neighborhood health centers to address other health problems in the community. At times, these organizations fail to coordinate their activities with those of the local public health agencies. Coordination among these groups is imperative.

Strategic approach. In a search for innovative approaches to funding public programs, CDC will identify and publicize successful efforts to mobilize private resources for community public health needs. In addition, CDC with other PHS agencies will examine current grant programs to find ways to increase flexibility and coordination at the State and community levels.

Specific CDC activities. To meet the need for better coordination in the use of funds, CDC has developed a Public Health System Impact Statement, which will be required of certain applicants, such as community-based organizations, in applying for Federal funds for selected purposes. The statement, prepared by the applicant, will provide information to the local health officer regarding the anticipated impact of the proposed project on the local public health system. With better communication at the point of grant submission, better coordination in funded activities is expected.

In addition, CDC will sponsor workshops to involve community-based organizations and public

health agencies in providing information on improved coordination in things like sexually transmitted disease control, for example. Such workshops will also share innovative approaches to securing private-sector funding for prevention programs.

The Role of CDC

As the nation's prevention agency, CDC has worked to build capacity in the public health system for many years. Through direct training of epidemiologists and laboratory scientists, CDC has strengthened the capacity of the public health work force in these two critical areas. By assigning public health advisors, preventive medicine residents, and Epidemic Intelligence Service officers to local and State disease prevention programs, CDC has strengthened the capacity of health agencies to conduct their programs. In addition, CDC regularly provides technical assistance in the form of personnel who interact with and support local and State public health staff members on a daily basis. By providing funds through the Preventive Health Services Block Grant or through grants for categorical programs, CDC has supported the development of prevention programs throughout the country.

In most cases, CDC efforts have focused on strengthening the capacity in a particular program area rather than strengthening the system generally. Future efforts in capacity-building must be designed not only to strengthen specific categorical programs, but also to build general system capacity, thereby strengthening the public health infrastructure.

Incentives and Planning

Strengthening the public health system requires incentives for all local and State health agencies to enhance their ability to perform basic public health practices and thus build a stronger public health system. Therefore, as part of the preparation process, strategies should be developed to encourage involvement. Such strategies are best developed by local and State health officials *for* local and State health officials.

Capacity-building activities will depend on an implementation plan that sets specific targets for the achievement of organizational objectives in a defined period. Such a plan has recently been published. "A Plan to Strengthen Public Health in the United States" (5) contains detailed descrip-

tions of many specific activities and will be used to monitor progress in key areas.

Basic Assumptions

In working to strengthen the public health system, certain basic assumptions must guide the conduct of future activities. First, local public health problems are best solved at the local level. Therefore, CDC's efforts to strengthen the public health system will focus on approaches designed to empower community leaders and enable community processes to develop local solutions for local problems. Although CDC has a vital role to play in providing national leadership, the ultimate success of the effort will depend on effective local and State leadership.

Second, the Federal Government should collaborate with and work through State governments to strengthen the "governmental presence in health at the local level" (8). In carrying out its mission, CDC will involve local and State leaders in all stages of planning, implementation, and evaluation of efforts to strengthen the system.

Third, the private sector is not just a significant, but an essential, partner in the public health system. Development of public-private partnerships to define priorities and address health issues will expand the capacity of the public health system to fulfill its mission.

Finally, expanding public support for the mission of public health (that is, "fulfilling society's interest in assuring conditions in which people can be healthy" [2]) is essential in expanding the public's commitment to public health programs and organizations. To achieve such support, the activities and programs of public health must be perceived as having *personal relevance* in the lives of all citizens.

References

1. Roper, W. L.: Strengthening the public health infrastructure. Toward better public health. Centers for Disease Control, Atlanta, GA, 1990.

2. Committee on the Study of the Future of Public Health, Institute of Medicine: The future of public health. National Academy Press, Washington, DC, 1988.

3. Public Health Service: Healthy people 2000: national health promotion and disease prevention objectives. DHHS Publication No. (PHS) 91-50212, U.S. Government Printing Office, Washington, DC, 1990.

4. Hanlon, J., and Pickett, G.: Public health administration and practice. Times Mirror/Mosby College Publishing, Santa Clara, CA, 1984.

5. Assistant Secretary for Health's Task Force to Strengthen Public Health in the United States: A plan to strengthen

public health in the United States. Public Health Rep 106 (Supp. 1): 1-86 (1991).

6. National profile of local health departments. National Association of County Health Officials, Washington, DC, 1990.

7. National Association of County Health Officials, American Public Health Association, Association of Schools of Public Health, Association of State and Territorial Health Officials, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, U.S. Conference of Local Health Officers: Assessment protocol for excellence in public health. National Association of County Health Officials, Washington, DC, 1991.

8. American Public Health Association, Association of State and Territorial Health Officials, National Association of County Health Officials, U.S. Conference of Local Health Officers, U.S. Department of Health and Human Services, Public Health Service: Healthy communities 2000: model standards: guidelines for community attainment of the year 2000 national health objectives. American Public Health Association, Washington, DC, 1991.

9. Gilder, G.: Life after television. The Larger Agenda Series. Whittle Direct Books, Knoxville, TN, 1990.